

3 September 2003  
Application No.: 09/954,861  
Docket: 1039eo2

This listing of claims will replace all prior versions and listings of claims in this application:

a.) Listing of Claims

1. (currently amended) A process for fabricating a deflectable optical MEMS structure having a dielectric coating, the process comprising:
  - forming a device layer;
  - depositing a multilayer reflective dielectric optical coating over the device layer;
  - depositing a mask layer over the device layer;
  - patterning the mask layer;
  - transferring a pattern of the mask layer into the dielectric coating; and
  - removing at least part of a sacrificial layer to release the device layer and form a membrane; and  
installing the membrane opposite a stationary reflector to form a tunable Fabry-Perot filter.
2. (original) A process as claimed in claim 1, wherein the step of removing the sacrificial layer is performed after the patterning of the dielectric coating.
3. (original) A process as claimed in claim 1, wherein the step of removing the sacrificial layer is performed, at least in part, before the patterning of the dielectric coating.
4. (original) A process as claimed in claim 1, wherein the step of forming the device layer comprises depositing the device layer on the sacrificial layer.
5. (original) A process as claimed in claim 1, wherein the step of forming the device layer comprises bonding the device layer to the sacrificial layer.
6. (original) A process as claimed in claim 1, wherein the step of depositing the mask layer comprises depositing a photoresist material.

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7. (original) A process as claimed in claim 1, wherein the step of depositing the mask layer comprises depositing a metal layer.
8. (original) A process as claimed in claim 1, wherein the step of patterning the mask layer comprises removing a portion mask layer in the an optical port region.
9. (original) A process as claimed in claim 1, wherein the step of patterning the mask layer comprises removing portions of the mask layer outside of the an optical port region.
10. (currently amended) A process as claimed in claim 1, for fabricating a deflectable optical MEMS structure having a dielectric coating, the process comprising:  
forming a device layer;  
depositing a multilayer reflective dielectric optical coating over the device layer;  
depositing a mask layer over the device layer;  
patterning the mask layer;  
transferring a pattern of the mask layer into the dielectric coating; and  
removing at least part of a sacrificial layer to release the device layer; and  
wherein the step of transferring the pattern of the mask layer into the dielectric coating comprises removing the mask layer and portions of the dielectric coating on the mask layer.
11. (original) A process as claimed in claim 1, wherein the step of transferring the pattern of the mask layer into the dielectric coating comprises etching portions of the dielectric coating exposed by the mask layer.
12. (original) A process as claimed in claim 1, further comprising patterning tethers into the device layer.
13. (original) A process as claimed in claim 1, wherein the step of removing at least part of the sacrificial layer is performed after the step of depositing the

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dielectric optical coating; the process further comprising covering the dielectric optical coating with a protecting layer during removal of the sacrificial layer.

14. (currently amended) A process as claimed in claim 10, further comprising installing the membrane at one end of a laser cavity.

15. (currently amended) A process as claimed in claim 10, further comprising installing the membrane opposite a stationary reflector to form a tunable Fabry-Perot filter.

16. (previously added) A process as claimed in claim 1, wherein the step of depositing the multilayer reflective dielectric optical coating over the device layer comprises depositing successive quarterwave dielectric coatings.

17. (currently amended) A process as claimed in claim 10, wherein the multilayer reflective dielectric optical coating functions as a dichroic filter.

18. (new) A process for fabricating a mirror of a tunable Fabry-Perot filter, the process comprising:

depositing a multilayer reflective dielectric optical coating ;  
depositing a mask layer;  
patterning the mask layer;  
transferring a pattern of the mask layer into the dielectric coating to thereby form the mirror of the tunable Fabry-Perot filter.

19. (new) A process as claimed in claim 18, wherein the step of depositing the mask layer comprises depositing a photoresist material.

20. (new) A process as claimed in claim 18, wherein the step of depositing the mask layer comprises depositing a metal layer.

21. (new) A process as claimed in claim 18, wherein the step of patterning the mask layer comprises removing a portion mask layer in a region of an optical axis.

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22. (new) A process as claimed in claim 18, wherein the step of patterning the mask layer comprises removing portions of the mask layer outside a region of an optical axis.
23. (new) A process as claimed in claim 18, wherein the step of transferring the pattern of the mask layer into the dielectric coating comprises removing the mask layer and portions of the dielectric coating on the mask layer.
24. (new) A process as claimed in claim 18, wherein the step of transferring the pattern of the mask layer into the dielectric coating comprises etching portions of the dielectric coating exposed by the mask layer.
25. (new) A process as claimed in claim 18, wherein the step of depositing the multilayer reflective dielectric optical coating over the device layer comprises depositing successive quarterwave dielectric coatings.
26. (new) A process as claimed in claim 18, wherein the multilayer reflective dielectric optical coating functions as a dichroic filter.